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Twenty plants will be reconstructed and several will be built during the Five-Year Plan. Two new plants for the manufacture of receiving sets are to be built.

The radio industry is organizing the development and manufacture of studio equipment. Equipment for reconstructing the Leningrad and restoring the Kiev Radio Buildings will be supplied in 1946.

The Five-Year Plan envisages the equipment of trunk lines of communication with modern, high-quality equipment. The Plan also foresees the adoption of transmission equipment, new radio tubes, photoelectric cells, devices for high-frequency tempering, electroannealing, etc.

Soviet industry must produce, within the next 5 years, 3 million receiving sets, of which 2,200,000 will be built by plants of the Ministry of the Electrical Industry. The production of receiving sets will be brought up to 925,000 a year by the end of the Five-Year Plan.

At present, the Ministry of the Electrical Industry has developed and is producing five types of receivers: "Rekord," "Salyut," "Rodina," "VEF-M-557," and "Vostok." Designers will continue to develop new types of radio receivers, bearing in mind the comments and wishes of consumers. An improved, high-quality receiving set, the "Leningrad," will go into production in the near future. In 1947 there will be ten types of receiving sets being produced, including radio-phonographs and automobile sets.

While mass production of receiving sets is being increased, steps are being taken toward the expansion of radio transmission by wire. Radio units which make radiofication of small villages possible have already been constructed. A small rebroadcasting set which uses battery feed and is equipped with a wind-driven generator is being developed.

The Five-Year Plan envisages great progress in television. This presents a serious task for the radio industry: to master mass production of television receiving sets. Television receivers were manufactured in small numbers before the war. By the end of the new Five-Year Plan, it will be necessary to bring production up to 85,000 sets per year.

Production of television receivers at plants in Moscow and Leningrad is to be organized, and the building of a plant for television equipment in Kiev is contemplated.

A great deal remains to be done in this field to ensure high-quality transmission within the next few years. The development of equipment for control rooms and television studios, ensuring clearness up to 625 lines, will be completed.

The Five-Year Plan stipulates the necessity "of ensuring the maximum increase in defensive capacity of the USSR, and supplying the armed forces of the Soviet Union with the newest military techniques."

While satisfying the needs of the population in broadcasting equipment and communications facilities, the radio industry must do a great deal in the creation of new types of radio and radio-navigation equipment for land, sea, and air forces on the basis of experience in World War II and later achievements. These instruments should use new and better units, tubes, and high-quality insulating materials (ceramics, polystyrenes, polythene, etc.) which will guarantee increased reliability and greater convenience in operation.

A large part of the refitting work should consist of developing radio equipment which solves entirely new problems.

The radio industry has often been criticized, with justification, for the unsatisfactory production of quality radio parts (condensers, resistors,

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transformers, etc.). Basic materials (for example, halowax, mica, press powder, capacitor paper, boron acid) which were used by the radio industry did not fully meet requirements as to quality and variety. After the war, the materials situation became worse, and the radio industry was forced to accept various substitutes.

At present, completely modern radio parts, fulfilling the most rigid requirements, are being developed and produced. Their production, however, is directly dependent upon higher quality and more varied materials made by plants of other ministries, such as the plants of the Ministries of Chemical Industry, Ferrous and Nonferrous Metallurgy, Construction Materials Industry, and the Petroleum Industry. These plants, which will have to produce many new materials in the near future, must support the radio industry.

The task of the radio industry is to organize, in the shortest possible time, mass production of radio parts in specialized plants, and, in addition, to produce them separately in independent production units at large plants.

The Ministry of the Electrical Industry is expanding the condenser shop at the Novosibirsk Radio Plant, organizing a shop for the manufacture of condensers at one of its plants, and setting up a shop for the production of radio parts in the reconstructed Voronezh Plant. A number of plants having shops for radio parts are receiving new equipment.

Innumerable problems in radio engineering can be solved by a sharp growth in the Soviet radio-tube industry.

Adoption of decimeter and centimeter bands is impossible without series production of magnetrons, klystrons, metalloceramic triodes and diodes. It is necessary to produce new types of tubes for short- and long-wave bands: universal tetrodes and triodes of glass construction ranging from several 10's to several 1000's of watts, and tubes with water-cooled outside copper anodes ranging up to 300 kilowatts. New amplifier tubes for standard broadcasting receiver sets and new amplifier tubes for transmitting sets having longer operational life must be developed.

Development of radar as well as television techniques demands the organization of series production of new-type cathode-ray tubes, including luminescent tubes with white, blue, and green screens, tubes with afterglow, etc.

Utilization of a larger number of radio tubes demands the introduction of new technological processes in the production of socketless tubes with a "flat base," new alloys for outlets, high-frequency ceramics, new preparations for the excitation of cathodes, and zirconian anodes.

Considerable work must be done in the field of electrical insulating materials in which wave and microwave techniques are creating entirely new demands.

In the transition to decimeter and centimeter waves, the ordinary structure of radio sets has undergone sharp modification, introducing special problems for designers and technicians.

Modern radio technology is based, to a considerable extent, on high-frequency ceramics which possess high stability. Ceramic enterprises must master the technology of producing ceramic condensers having constant and variable capacities, as well as other radio parts.

An extremely important problem for the Ministry of Electrical Industry is the restoration and development of a scientific research base in the radio industry. Conditions at the beginning of World War II halted activity in a number of scientific research institutes and laboratories. With government aid, restoration began in 1943. During this period, it was decided to organize new scientific research institutes. Some of these began operation before the war was over.

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television institute is being organized, and a special design bureau for dealing with problems in television techniques has been set up. Work on the organization of a central laboratory for combating industrial interference is under way. The activity of the IRPA (Institute of Radio Reception and Acoustics) is being resumed.

During the latter years of the war, the Ministry of Electrical Industry organized a number of central laboratories to study cables, graphite products, battery cells, and other materials which are closely connected with the radio industry.

Much remains to be done to improve the future activity of existing scientific research organizations and to form a number of new ones. Production of radio equipment is a complex matter. For this reason, good organization of production is especially important. The goal is to achieve maximum standardization of basic radio units and parts in order to simplify production and reduce the cost of building radio equipment. Assembly-line production in the radio-equipment industry will be widely used to improve the operation of tool and repair shops.

Consideration must be given to the selection and training of specialized personnel, particularly for eastern plants. Amateur radio operators have been called upon to play an important part in the solution of this problem. They have proven themselves in industry and in scientific research institutes. Workers, foremen, technicians, and engineers who have completed the amateur radio operators' school are the industry's "gold mine" of creative initiative, keenness, and ingenuity.

A great number of workers in the radio industry gained valuable experience in the effort to develop radio technology during the first Stalin Five-Year Plans and have significantly augmented this experience during the difficult years of the war.

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